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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,052	04/02/2007	Malcolm Lambert	DP-310801	9228

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EXAMINER	
JONAITIS, JUSTIN M	

ART UNIT	PAPER NUMBER
3752	

MAIL DATE	DELIVERY MODE
07/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,052	LAMBERT ET AL.	
	Examiner	Art Unit	
	JUSTIN JONAITIS	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

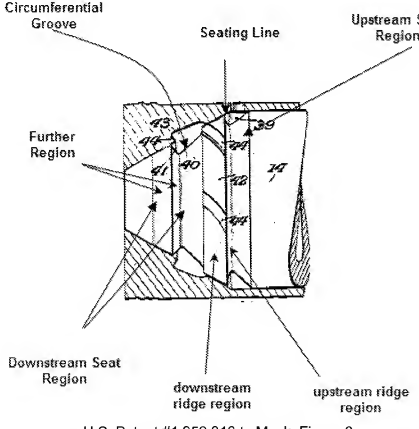
Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent #1,952,816 to Mock.

The figure below is reproduced from the Mock Figure 3 reference in order to show examiner's interpretation.



U.S. Patent #1,952,816 to Mock: Figure 3

Mock discloses an injection nozzle for an internal combustion engine which is a valve covering orifice type injector, the injection nozzle comprising: a nozzle body (casing member (6)) provided with a bore (bore (10)) defining a valve seating surface (conical valve seat (11)), a valve member (valve (14)) which is moveable within the bore, wherein the valve member includes an upstream seat region (See Figure above) defining an upstream cone angle, where the upstream cone angle and the seat cone angle define an upstream differential angle, and a downstream seat region (See Figure above) defining a downstream cone angle, the downstream cone angle and the seat cone angle together defining a downstream differential angle, the valve member further comprising an annular ridge(See Figure above, downstream ridge region and upstream ridge region) protruding from the upstream and downstream seat region being disposed immediately downstream of the upstream seat region, wherein the protruding annular ridge defines a seating line (See Figure above) having a seat diameter, the seating line and being engageable with the valve seating surface to control fuel injection from the nozzle body. The protruding annular ridge includes an upstream and downstream ridge region (See Figure above) where the seating line is defined at an intersection between the upstream and downstream ridge regions.

The valve member disclosed by mock further includes a circumferential groove (See Figure above) arranged downstream of the downstream ridge region and immediately upstream of the further region (the end portion of the downstream seat region), wherein a lower edge of the circumferential groove and the further region define an intersection which defines, together with the seating surface a radial clearance that is sufficiently small so that a lower portion of the downstream ridge region defines a load bearing surface for the valve member.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent #1,952,816 to Mock.

Mock discloses the invention as described above including the region adjacent to the protruding ridge on the downstream side of the seating line is a valve tip region, and the valve tip region including a chamfered tip (tip portion of valve is slanted). Mock however fails to disclose the specific dimensioning of components (the radial clearance of the valve and the upstream differential angle vs. downstream differential angle) necessary to provide the various desired seating of the valve with the seating surface.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the appropriate dimensions of components in order to produce the desired seating arrangement of the valve needle in the valve seat, since it has been held that

where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Response to Arguments

6. Applicant's arguments filed 04/19/2010 have been fully considered but they are not persuasive. Applicant argues on page 5 of the arguments and remarks that Mock does not teach a protruding annular ridge that defines a seating line engageable with the valve seating surface to control fuel injection from the nozzle body as specified by applicant's claim 1. Applicant further states on page 6 that a magnified view of Mock clearly shows that the cone angle of the bore in the casing 6 is wider than the cone angle of frusto-conical shoulder (42). As a result the upstream edge of shoulder (42) cannot engage the surface of the bore in the casing to control fuel injection from the nozzle body, but rather there is a gap between the upstream edge of shoulder (42) and the surface of the bore in the casing (6).

7. Examiner agrees with applicant's interpretation of figure 3, however does not agree that the claimed limitations have not been met by the invention described by Mock. The zoomed in view of Figure 3 clearly shows that the angle of the bore in the casing is wider than the cone angle of the conical shoulder, as seen in the magnified view of figure 3 provided by applicant, however in the same figure it can be seen that the angles converge downstream of the gap creating a seat region. Therefore since the downstream region of the shoulder and the casing are in contact the limitations of an upstream seat region have been met.

8. Applicant further argues on page 7, that the presence of grooves (44) on shoulder (42), shown in figure 3, extend to the upstream edge of the shoulder, which would prevent the upstream edge from shutting off fuel flow even if it were able to engage the surface of the bore. Applicant believes that this provides further evidence that the upstream edge of shoulder (42) is

not a seating line engageable with the valve seating surface to control fuel injection from the nozzle body.

9. Examiner disagrees. Applicant has not claimed that the upstream seating region must shut off the flow of fuel. Applicant has merely claimed that the valve member has an upstream seat region, Because mock shows a region upstream from the tip of the needle that sits against the casing (6) this limitation is fulfilled. Further applicant acknowledges in the remarks and arguments that on page 2, lines 131-137 of mock, "the frusto-conical shoulder (42) is preferably provided with spiral slots or grooves (44) on its periphery for increasing the area on which pressure may act to move valve (14)..." It's unclear how this structure does not assist in controlling fuel injection from the nozzle body as it clearly is aids in allowing the valve needle to move.

10. Applicant further argues on page 7, that in the preferred embodiments shown in figures 4 and 5, the construction is provided insuring a tight seat adjacent the nozzle orifice, but having a slight clearance between the head and seat for the remaining area. Applicant states, "Mock's Figs. 4 and 5 clearly show clearance (46) in the vicinity of frusto-conical shoulder (42), providing further evidence that Mock provides no teaching or suggestion of the upstream (right-hand) edge of shoulder (42) being a seating line engageable with being a seating line engageable with the valve seating surface to control fuel injection from the nozzle body as specified by Applicant's claim 1."

11. Examiner agrees that the preferred embodiments of Mock seen in figures 4 and 5 show a clearance (46), however clearance (46) is not seen in the embodiment relied upon for the rejection (figure 3). Figure 4 of Mock includes a clearance (46) and on page3, lines 40-55 Mock states, "The modification shown in Figure 5 incorporates the novel features of the construction in figure 3 including the rear and intermediate annular recesses (39) and (40) respectively

forming a frusto-conical shoulder (42) which is provided on its surface with spiral grooves (44) together with the annular recess (43) formed in the valve seat (11). **This modification also includes novel features of the construction shown in Fig. 4** that the angle of the generally conical surface of the valve head is made less than the conical surface of the valve seat with respect to the axis of the valve, forming a seat (45) adjacent the nozzle orifice (12) **and a clearance (46) to the rear of the head.**

12. The emphasized portions of the text show that the clearance (46) is a strictly present in the embodiment illustrated by figure 4 and was incorporated (along with the features of figure 3) into the embodiment illustrated in figure 5. This further provides evidence that the embodiment in figure 3 does not have a clearance between the casing and the frusto-conical shoulder. Therefore the rejection of independent claim 1 is maintained. Because the arguments of claims 2-12 are dependent on claim 1 and no further arguments have been presented, the rejection of claims 2-12 is also maintained.

Conclusion

1 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN JONAITIS whose telephone number is (571)270-5150. The examiner can normally be reached on Monday - Thurs 6:30am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUSTIN JONAITIS/
Examiner, Art Unit 3752
6-23-2010

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752